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ABSTRACT

The objective of a study was to determine if academic achievement in nursing courses could be used to predict success on the National Council Licensure Examination for Registered Nurses (NCLEX-RN). It investigated the relationship between NCLEX outcomes and academic achievement in theory and clinical courses and the relationship between NCLEX outcomes and course repeats in nursing school. The study also identified if any particular nursing course was predictive of NCLEX outcomes. Independent variables were nursing theory and clinical grade point averages (GPAs) and the number of repeated theory and clinical courses; the dependent variable was success or failure on the NCLEX. The population included all generic associated degree nursing program students (N=254) who graduated from Miami-Dade Community College (Florida) from Fall 1983 to Fall 1985. Chi-square analysis proved significant differences between the success and failure groups on the NCLEX for the variables of nursing theory GPA, nursing clinical GPA, no repeats in nursing theory, and three or more repeats in nursing theory. The Pearson correlation coefficient tests revealed that the independent variables in the nursing program that may have influenced student success on the NCLEX were GPA in theory, GPA in clinical, no repeats in theory, and repeating theory three or more times. (YLB)

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THE DETERMINATION OF THE RELATIONSHIP BETWEEN ACADEMIC ACHIEVEMENT IN NURSING COURSES AND SUCCESS ON THE REGISTERED NURSE LICENSURE EXAMINATION

by

Julie E. Millican

A Major Applied Research Project presented in partial fulfillment of the requirements for the degree of Doctor of Education

Nova University

December 1986

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Abstract of a Major Applied Research Projected Presented to Nova University in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

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Students in the Miami-Dade Community College Associate Degree Nursing (ADN) Program were failing the licensure examination for Registered Nurses at a higher rate than the national norm. Measures of success for students in the program include both graduation from nursing school and passing the National Council Licensure Examination for Registered Nurses (NCLEX-RN). Methods of identifying nursing students at high risk to fail the NCLEX needed to be found.

The purpose of this project was threefold: to investigate the relationship between NCLEX outcomes and academic achievement in theory and clinical courses in nursing school; to investigate the relationship between NCLEX

outcomes and course repeats in nursing school; and to identify if any particular nursing course was predictive of NCLEX outcome. The independent variables for this study were nursing theory and clinical grade point averages and the number of repeated theory and clinical courses. The dependent variable was success or failure on the NCLEX.

The research questions addressed in this study included:

1. Is there a relationship between students' grade point averages (GPA) in nursing theory and clinical courses and success or failure on the NCLEX?

2. Is there a relationship between the number of nursing courses repeated and success or failure on the NCLEX?

3. Is there any particular nursing course that predicts success or failure on the NCLEX?

The population for this study included all of the ADN generic students (N=254) that graduated from the program over a two year period from Fall 1983 to Fall 1985. The records of all graduates were examined for specific demographic and academic information and the data was compiled and categorized. Graduates were placed into two groups identified as those who were successful on the NCLEX and those who failed the NCLEX.

Ten null hypotheses were formulated and analyzed by use of the chi-square test with .05 as the acceptable probability level. The chi-square analysis proved that

there was a significant difference between the success and failure groups on the NCLEX for the variables of nursing theory GPA, nursing clinical GPA, no repeats in nursing theory and three or more repeats in nursing theory. There was no significant difference between the success and failure groups on the NCLEX for the variables of one repeat in nursing theory, two repeats in nursing theory, no repeats in nursing clinical, one repeat in nursing clinical, two repeats in nursing clinical and three repeats in clinical.

The statistical method used to determine the relationship between the predictor variable and the criterion variable was the Pearson correlation coefficient. The tests revealed that the independent variables in the nursing program which may have influenced student success on the NCLEX were found to be grade point average in theory, grade point average in clinical, no repeats in theory and repeating theory three or more times. The other variables under study did not appear to have any significant relationship with success or failure on the NCLEX.

Based on the results of this major applied research project the recommendations are that:

1. Designated nursing faculty counsel all students who fail or withdraw from a nursing course.

2. Reasons for the failure and/or withdrawal be documented to serve as a basis for prescribing the appropriate remediation and support to the nursing student.

3. Separate guidelines be established for the number of repeats allowed for theory and clinical courses.

4. A permanent study laboratory course be established for nursing students who have demonstrated previous difficulties with coursework in the nursing program.

5. Students identified in the high risk groups be required to take the study laboratory course.

6. A follow-up study be conducted on students in this course regarding their academic performance and success on the NCLEX.

7. Each high risk student be assessed at the end of the freshman year for the effects of the treatment.

8. Attention be given to those identified in this study as possessing the profile of the non-successful student.

9. Further studies be conducted on certain demographic and educational characteristics of students in the program and success or failure on the NCLEX.

10. Faculty, students and academic advisors have access to the results of this project and the prescriptions available to the high risk groups.

11. A committee consisting of nursing faculty, Reading and English Department faculty and academic advisors be established to review particular situations regarding student retention and advisement.

12. Exit interviews for students withdrawing from the program due to academic reasons place additional emphasis on the reasons for withdrawal.

13. An ongoing evaluation of the nursing program be conducted by examining students' performance on the NCLEX and admitting or program criteria.

14. A study be conducted to investigate reasons why certain nursing courses had a high number of failures.

15. More studies regarding repeated nursing courses and NCLEX outcomes be conducted in other similar programs.

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CHAPTER 1

INTRODUCTION

Statement of the Problem

Students in the Associate Degree Nursing (ADN) Program at Miami-Dade Community College (MDCC) were failing the licensure examination for Registered Nurses at a higher rate than the national norm and also at a higher rate when compared to other similar programs in the State. There was a need to examine the curriculum and to establish program guidelines which would maximize the graduate's potential for success on the licensure examination. The objective of this study was to determine if academic achievement in nursing courses could be used to predict success on the first writing of the National Council Licensure Examination for Registered Nurses (NCLEX-RN).

Purpose of the Study

Maintaining an examination pass rate equal to or greater than the national norm is of paramount importance to the nursing program and helps maintain student confidence in that program. Confidence in the learning environment affects student performance and should be of concern to faculty. Clark and Ammons (1970) reported that attitudes

towards self and the environment are significant factors in school achievement.

There has been an increased focus on student recruitment and retention and nursing programs need to more critically examine measures of success (ANA: 1983). Educators are facing an era of declining college enrollments. Associate Degree Nursing Programs have managed to maintain a fairly steady enrollment rate, even in such controversial times concerning entry into practice (NLN: 1984:28). ADN programs graduate approximately fifty-five percent of all new registered nurses (ANA: 1985). However, there has been a persistently high attrition rate in nursing programs across the nation for a number of years. Donsky (1981) reported an attrition rate of approximately one out of every three students who have entered a nursing program. The fact that the majority of Associate Degree Nursing (ADN) Programs are located in two-year open access community colleges and that nursing programs are of a highly technical nature may make a high level of attrition inevitable. It remains the educator's responsibility to minimize student attrition and maximize student success by developing specific selection criteria and program guidelines.

Measures of success in nursing education include graduation from a school of nursing and passing the licensure examination in order to practice the nursing profession. The Florida State Board of Nursing has at times

considered a move to place schools of nursing with "high" failure rates on probation because of deficiencies in their nursing programs reflected in NCLEX results. It is important for the program to maintain the confidence of the State Board of Nursing as well as the students, faculty and general public. Another intent of the study was to address the need expressed by faculty and administration to examine the relationship between students that repeat nursing courses and their success or failure on the NCLEX. This information was important to faculty in order to determine reasonable program guidelines. The question arose of whether academic achievement in nursing courses for this program was a predictor of success on the licensure exam and if the number of times a course was repeated influenced that success.

The purpose of this study was to determine variables associated with success or failure on the licensure examination. The independent variables for this study were academic achievement as represented by passing or repeating a nursing course and nursing grade point averages for both theory and clinical courses. The dependent variable was success or failure on the NCLEX.

The subject of this study was whether students who completed the ADN Program and passed the NCLEX differed on various academic characteristics from students who graduated from the program but failed the licensure examination.

There was a need to investigate academic achievement in nursing courses and its relationship to NCLEX results in order to set criteria and guidelines for in-program students and to identify who comprised the high risk group for failing the NCLEX. Students with limited potential for satisfactory performance could be identified and receive special assistance or counseled into programs for which they are better suited.

Research Questions and Hypotheses

Several research questions were addressed in this study:

1. Is there a relationship between students' grade point averages in nursing and success or failure on the NCLEX?

2. Is there a relationship between the number of repeated nursing courses and success or failure on the NCLEX?

3. Is there any particular nursing course that predicts success or failure on NCLEX?

These questions led to the formulation of the null hypotheses for the study:

1. There is no significant difference between grade point averages in nursing theory courses and success or failure on the NCLEX.

2. There is no significant difference between grade point averages in nursing clinical courses and success or failure on the NCLEX.

3. There is no significant difference between students that do not repeat a theory course and their success or failure on the NCLEX.

4. There is no significant difference between students that repeat nursing theory one time and their success or failure on the NCLEX.

5. There is no significant difference between students that repeat two nursing theory courses and their success or failure on the NCLEX.

6. There is no significant difference between students that repeat three or more nursing theory courses and their success or failure on the NCLEX.

7. There is no significant difference between students that do not repeat a clinical course and their success or failure on the NCLEX.

8. There is no significant difference between students that repeat a clinical course one time and their success or failure on the NCLEX.

9. There is no significant difference between students that repeat two nursing clinical courses and their success or failure on the NCLEX.

10. There is no significant difference between students that repeat three or more nursing clinical courses and their success or failure on the NCLEX.

Background and Significance

The concept of the associate degree nurse was proposed by Dr. Mildred Montag after the severe nursing shortage of World War II. It was put into practice in the community college as early as 1952. Today, Associate Degree Nursing (ADN) Programs graduate 55 percent of all new registered nurses and approximatley 90-93 percent pass on their first attempt at licensure (Wajdowicz:1986). ADN programs have seemed to accomplish what they set out to do; that is, provide easy access and availability to a diversity of students seeking a nursing career in the two-year community or junior college setting. Associate Degree Nursing Programs report the highest numbers of minority, male and mature students (ANA:1984-85).

Miami-Dade Community College (MDCC) is one of the largest community college systems in the nation and is located in the metropolitan Dade County area of Florida. The Associate Degree Nursing Program at MDCC admits approximately 160 students each year. About 30 percent of each admitting class goes on to graduate by the end of the two years. The remainder of the admitting class either leave the program (10%) or graduate in more than the two years (60%). Students in this program withdraw completely for various reasons; among them being personal and financial demands, for scholastically failing a nursing course twice, or for falling below a 2.0 cumulative average. The overall attrition rate for the program is

approximately 20-25 percent. The failure rate on licensure examinations over the last three years for MDCC has ranged from a low of 6.7 percent to a high of 36 percent with an average of 13.8 percent failures (see Appendix A). This rate is somewhat higher than the State's failure rate of approximately 7-8 percent (Florida Board of Nursing:1986).

It is important to identify as early as possible those students who are at risk to fail in the program and those at risk to fail the NCLEX. If those who are likely to be unsuccessful on the NCLEX could be identified early in the program versus at the completion of the program, appropriate counseling and remediation could occur.

The objectives of the nursing program at MDCC are for all qualified admittants of the program to graduate and go on to pass the licensure examination for Registered Nurses and for faculty to seek out methods to minimize the number of failures on the examination. When academic failure has occurred or the student has failed the licensure examination these goals are not met. Detecting and remedying shortcomings in the student or in the program prior to the examination would save time and resources for all concerned as well as prevent the anxiety and stigma of failure in the student's life experience. In interviewing students that failed the licensure examination, Kopala (1982:314) states:

> We learn to our dismay that most [students] are in some degree of crisis, and that both their professional and personal identities are severely damaged. They were in crisis and their ability to cope with the impact of the failed exam on their lives was greatly diminished.

The admission policy for the ADN Program at MDCC includes the general admission criteria for the college and specific selection criteria developed by nursing faculty. The nursing program follows college policy and students are admitted to the program without regards to ethnicity, sex, age, race, marital status or religion.

The three major ethnic groups represented at the Medical Center Campus, where the Department of Nursing Education resides, are approximately 41 percent white non-Hispanic, 32 percent Hispanic and 24 percent black non-Hispanic students (MDCC:1984:2.6). There is a need for nursing faculty to design guidelines for all students which are realistic enough to ensure the highest probability of completing the program and of passing the NCLEX. Walter Johnson (1977:46) concedes that, "certain specialized areas within the college, such as nursing be exempt from totally open admission lest the open door become a revolving door."

All nursing applicants to the program must first meet the college admission requirements which include taking the Florida MAPS (Multiple Assessment and Placement Service) test for assessment of reading, writing and mathematic ability. If scores fall below a designated cut-off level, the student must complete prescribed developmental courses before consideration for the nursing program. After meeting these requirements, nursing applicants are given priority based on the number of non-nursing and natural science courses completed with a "C" or better and their

cumulative grade point average, with a minimum of 2.0 being acceptable. In addition, they must meet specified health requirements. Students are given individual advisement and counseling services by the nursing department and are required to attend an information session before classes begin.

The generic (two-year) ADN Program at MDCC consists of five semesters with a total of 87 college credits. These include 57 credits of nursing and 15 credits in the natural sciences. The remaining 15 credits consist of general education courses (see Appendix B). Students are encouraged to complete as many non-nursing credits as possible prior to entering the program. Each semester in the nursing curriculum has a theory and clinical component conducted as separate courses.

Several program policies (ADN Policies:1985) regarding student achievement relate to the information presented in this study:

1. A student must earn a grade of "C" or better in each nursing course and all natural sciences in order to advance in the nursing program.

2. A student may register or attempt a designated segment of a nursing course only twice. If unsuccessful on the second attempt, the student is terminated from the program. A withdrawal from the course is considered one enrollment for that course and appears on the transcript.

3. A student who withdraws from a nursing theory course must also withdraw from the corresponding clinical course.

4. A cumulative GPA of 2.00 or above must be maintained while enrolled in the nursing program.

Students completing the nursing program successfully go on to write the NCLEX-RN. Since 1942, the exam, formerly called the State Board Test Pool Examination (SBTPE), has been utilized by all states as a measure of entry-level competency for registered nurses. In 1977, a major revision of the test plan was undertaken by the Examination Committee of the National League for Nursing (NLN). This committee is the testing service for the National Council of State Boards of Nursing (NCSBN) which owns the exam and contracts with the NLN for the development of the exam (Sheridan:1981:15). Each individual state board contracts with the NLN for use of the exam. The NLN then returns those scores to the individual state boards of nursing which customarily releases the scores to the individual candidates (Kane:1981:20). In June 1981,the NCSBN selected the California Testing Bureau of McGraw-Hill to develop future licensing exams (Smeltzer:1982:313).

The new test plan was instituted with the July 1982 licensure examination and was based on a plan which combined the five subtests and five subscores on the State Board Examination into a single examination having a single score. The rationale for the change was that:

> Committee members wanted the test to be placed in an overall framework that reflected nursing, not the medical grouping by subspecialties that had heretofore been used...Also it was determined from the validity study of the State Board Test Pool Examination that there was a great deal of intercorrelation between the current subtests and that a single score would be used to reflect knowledge of nursing. (McQuaid:1981:4).

Another difference in the test is that a norm-referenced scoring system had been used for the licensure exams prior to July 1982. For the new exam, termed the National Council Licensure Examination for Registered Nurses (NCLEX-RN), performance is criterion-referenced with a set standard for judging acceptable performance and a well-defined domain of behaviors. Since July 1982 this new test plan has been utilized with little variance of the previous national norms (AJN:1983).

A study to determine whether the NCLEX-RN was a "valid test of the behaviors required of entry level RN's for safe and effective practice" was conducted in 1983 by the Council of State Boards of Nursing. Findings indicated that the behaviors contained in the RN test plan were in fact performed by entry level RN's and that "the behaviors were represented proportionately in the test plan (The American Nurse:1984:12-13)."

The NCLEX-RN is given twice yearly in February and July throughout the United States. Instead of each state setting its own standards for minimal passing scores, a score of 1600 is considered to be acceptable in all states for entry

into practice. At this time, graduates from the three types of registered nursing programs (associate degree baccalaureate degree and hospital diploma) are eligible to write the examination (Smeltzer:1982). Most of the studies reviewed in the literature incorporated the State Board Test Pool Examination and not the new NCLEX-RN test plan.

Definition of Terms

The following terms are used in this study to convey the following meanings:

Academic Achievement: Cognitive performance as indicated by course grades and grade point average.

Academic Failure: Any student who fails one nursing course with a grade of "D" or "F" more than one time.

ADN Generic Program: A two-year community college based nursing program leading to an Associate of Science Degree in Nursing. Graduates of the ADN Program are eligible to write the NCLEX-RN.

Attrition: All students admitted to the nursing program who are dismissed due to academic failure or who withdraw voluntarily from the ADN Program.

Clinical: The nursing practice course which usually takes place in a health care facility such as a hospital or nursing home.

Dependent Variable: Success on the NCLEX-RN at the first writing of the examination.

Failure: Obtaining less than the required passing score on the NCLEX-RN of 1600 at the first writing of the examination and being denied licensure as a Registered Nurse.

GPA Nursing: An average of the grades received by a student nurse in each of the five semesters of nursing theory or nursing clinical courses.

Independent Variables: Academic achievement as represented by passing or repeating a nursing course and nursing grade point averages for theory and clinical courses.

NCLEX-RN: The National Council Licensure Examination for Registered Nurses administered by the Board of Nursing in each state to graduate nurses to assure minimum safety in nursing practice before licensing them as Registered Nurses. Formerly called the State Board Test Pool Examination (SBTPE or SBE).

NLN Achievement Tests: Nationally standardized tests, developed by the National League for Nursing Testing Service, covering a variety of content areas in nursing.

Open Door Policy: The policy of the college which allows for admission of virtually all who are interested in attending. For credit programs, students must hold a high school diploma or its equivalency. The nursing program requires additional criteria.

Passing: A student that attains a grade of "C" or better in a nursing course.

Repeater: A student that repeats a nursing course due to academic failure or a previous enrollment in that course. Each nursing course can be repeated one time only.

Seminar: A learning format used in conjunction with the clinical portion of the nursing program which consists of large group discussion via an instructor. This format was utilized until Fall 1984 when seminar was deleted from clinical and incorporated into theory to enhance lecture time.

Success: Obtaining a passing score of 1600 on the NCLEX-RN on the first writing of the examination and being licensed as a Registered Nurse.

Theory: The nursing lecture course.

Basic Assumptions

Some basic assumptions of the study were as follows:

1. MDCC students are similar to nursing students in other ADN Programs across the country, permitting certain generalizations of the findings to other ADN Programs.

2. All students in the study had met the MDCC ADN Program admission requirements including having a high school diploma or the equivalency and attaining a minimum set score on MDCC placement exams.

3. A significant amount of accurate information was available regarding the students' status on the NCLEX-RN.

4. The population was of sufficient size as to be representative of students enrolled in the MDCC nursing program.

5. All students had met the requirement of having passed the required science courses with a grade of "C" or better.

6. Two-year ADN students have a wide range of academic abilities and that students in the study reflected the normal range of intelligence.

7. There were a sufficient number of students within each category examined to enable certain generalizations to be made regarding the data.

8. All students in the study wrote the new National Council Licensure Examination for Registered Nurses in effect since July 1982.

9. The curriculum content for all students was consistent over the three year period examined.

Limitations of the Study

The following limitations of the study were identified:

1. Only nursing students in the MDCC ADN two-year program were included in the study group. Therefore, generalizations of the findings are restricted to students in an ADN Program.

2. Data collection was limited to the 254 students that graduated from the ADN Program from Fall 1983 to Fall 1985.

Students who left the program during that time period were not included in the population.

3. Motivation to learn and economic and personal problems which may have affected the student's success in the program and on the NCLEX were not considered in this study.

4. Approximately half of the graduates in the study received a seminar learning format in conjunction with a clinical course. Seminar was later deleted from the clinical course and incorporated into the nursing theory course.

5. Success was limited to passing the NCLEX on the first attempt. Subsequent passing of the examination was not considered within the scope of this study.

6. The population for this study did not draw on national samples but was from one non-randomized total population of ADN students.

7. Demographic data was limited to age, sex and ethnicity of the students. No psychosocial variables were examined.

8. Grade point averages were limited to nursing theory and nursing clinical courses.

9. The many intervening variables such as course instructors, previous learning experiences and level of education were not subject to control.

10. General education and science courses were not examined in this study. Only nursing courses were examined.

11. The number of courses taken each semester by a student, in addition to the required nursing courses varied by individual.

12. A withdrawal from a nursing course was counted as one enrollment in that course according to program policy; however, students who withdrew from a course may have done so for other than academic reasons.

Chapter 2

REVIEW OF RELATED LITERATURE

Presented in this section is an overview of the literature related to the problem being studied in this paper. It includes a discussion on prediction of success in nursing school and on the licensure exam as well as materials related to academic achievement.

Literature Related to the Prediction of Success in Nursing School Based on Academic Criteria

Various studies have been conducted which examined predictors of success in nursing school. Schwirian (1976), in reviewing the literature on the prediction of student performance, found that three major performance categories were primarily investigated. They were academic achievement while still enrolled in school, postgraduate performance on the licensure examination, and post-graduate performance as a practicing nurse. Performance prediction studies in nursing schools usually used course grades and grade point averages. Noncognitive attributes added little to successful performance prediction.

Schwirian (1976:9), in reviewing the studies, found that the prediction of clinical course grades was less often addressed than theory grades and even when it was, "the findings did not aid in the identification of any reliable

predictors of performance." Schwirian (1976) concluded that as a predictor of State Board Examination (SBE) performance, the best available predictor was the NLN Achievement Tests. Other useful predictors were theory grades and grade point averages. Grades in students' clinical courses were not as good of predictors for SBE.

Burgess, Duffey and Temple (1972) examined 22 variables to determine which variable would predict successful completion in the program in terms of overall GPA. Five factors were found to be significantly related to success in nursing. The five predictors, in order of priority were; combined freshman and sophomore GPA, School and College Ability Test total scores, ideal self-concept depression score from the Minnesota Multiphasic Personality Inventory and the mechanical interest test of the Kuder. The best predictor of success in nursing school was determined to be GPA.

Best (1969) collected information on 180 students in the ADN Program at Purdue University including creativity, intellectual and emotional abilities, and biographical aspects. The criteria measures used were the GPA at the end of the second semester and grades in various nursing courses. Multiple regression analysis of these data indicated that 24 predictors were able to accurately predict a student's grade point average at the end of the the first year. Such information was used to assist counselors and faculty in identifying areas of student

performance that might require certain developmental studies or remediation.

Grade point average and the ACT (American College Testing) Program have been commonly used measures to predict success in nursing school. Munday and Hoyt (1965) reviewed available data on the use of the ACT in nursing schools and compared its validity with that of other measures. They found ACT data to be excellent predictors of over-all grades in the first year of nursing school.

Taylor et al. (1966) conducted a comprehensive review of research studies and practices related to the recruitment and selection of nursing students and predictors of success in nursing programs. They found the highest single correlations to be between performance and achievement tests and between performance and either state board examinations or grades in school. There was little agreement in the studies of a single best predictor of success in nursing school; however, high school grades, achievement tests and aptitude appeared to predict academic success in individual nursing schools.

Lambert and Wehrle (1981) found that various attempts at El Centro College in Dallas, Texas, were made to help retain Associate Degree Nursing students in that program. This included pre-admission testing and placement in developmental reading and mathematics courses when indicated. Even when nursing students were rechanneled into the program immediately, versus sitting out a term due

to course sequencing, the faculty found that the problems were not in nursing but in the basic skills of reading, writing and mathematics. They found that students continued to pass their repeated nursing courses and still were unable to pass boards.

Sawyer and James (1979) developed a prediction equation for freshman college grade point averages based on American College Tests and high school grades. Owen and Feldhusen (1970) found that prediction of grade point averages of nursing students could be improved by including the most recent achievement information possible in the prediction battery.

A number of studies examined first quarter performance with later success in nursing school. Smith (1983) found the number of courses taken in the first quarter by a community college student to be predictive of student performance and persistence. Lenning et al. (1980) found that the first quarter GPA was a valid predictor of persistence and success in ADN programs. Clemence (1978), Backman (1971), and others agreed that grade point average was the most significant factor in relation to success in nursing school and that course grades were traditional predictors of success in nursing.

Montgomery and Palmer (1976) noted that the number of previously earned college credits was one of the best indicators of academic success in the beginning nursing course. The MDCC ADN Program advises students to complete

as many required non-nursing courses as possible prior to entering the nursing program. It is recommended that at least 10 credits of science be taken with a minimum grade of "C" attained. Faculty also recommend that students not work or that they decrease their workload because of the high demands of the program. Students who are forced to work full-time are encouraged to enter the part-time program in nursing.

Yess (1980:21) focused on the problems of student selection and success with the community college open-door policy stating:

> At the community college level the Nursing Education curriculum is usually designed to be a terminal career program. Nursing educators are attempting to come to grips with the vexations inherent in the apparent conflict between the community college's open-door admissions policy and the training of highly competent nurses.

Yess (1980) examined selective demographic and academic criteria in an effort to predict academic success in a community college ADN Program. Yess (1980) found the Scholastic Aptitude Mathematics Test Score (SATM) to be the single most important predictor of nursing education community college success and concluded that SAT results should be considered in the admission of community college nursing applicants. Backman and Steindler (1971) found the best predictors of achievement in the ADN Program at Rutgers University, New Jersey, were tests of verbal ability and general information such as the SAT verbal test.

A review of the literature by Taylor et al. (1967) indicated that the most frequently studied, and apparently the most effective correlates of academic success, have been intelligence tests, aptitude tests and rank in high school class. Studies using GPA's as criterion measures have been far more frequent in the literature than those which involve SBE scores. Personality and interest tests have been of little predictive value.

Seither (1980) found that the majority of predictive studies in baccalaureate nursing have used the cumulative grade point average or state board examination scores as criteria for success. She examined prediction of achievement based on cumulative grade point average and state board scores and found that GPA in nursing courses had the highest correlation with the cumulative GPA. Seither (1980) cautions about these findings because, "nursing courses make up the largest single block of credits within the total curriculum, [and therefore] these courses would have a marked impact upon the cumulative grade point average."

Bello (1977) and Efurd (1978) reported college science courses as valid factors predictive of success or failure in ADN programs. In two studies of prediction of success in a collegiate program of nursing by Burgess, Duffey and Temple (1972), pre-nursing grade point average at the freshman and sophomore levels emerged as the single most significant predictor of overall nursing school success.

Many studies have used academic achievement as a predictor of future academic success in nursing. Consideration must be given to a variety of studies; however, as Munday and Hoyt (1965:34) point out:

> One study in one institution does not establish the validity of measuring devices for other institutions of the same type. There are important institutional differences in course content, course evaluation procedures, the variability of course grades, and other factors. The most useful validity statistics for a particular institution are those established for that institution. However, by knowing the experience of other institutions, some hypotheses about potentially useful measuring devices can be made.

Literature Related to Tests as Predictors of Success on the Licensure Examination

Numerous studies reviewed in the literature focused on the prediction of success on the licensure examination for Registered Nurses. Most of the literature refers to the State Board Examination for Registered Nurses and not the revised comprehensive examination, now called the NCLEX-RN. The revised exam has not significantly altered the results for new graduates who sat for the examination since its inception in July 1982 (AJN:1983:1122). Therefore, it was felt that studies reviewed in this section were applicable to the current project.

Ferguson (1979) emphasized that successful test taking is an important aspect of nursing education since a nursing graduate goes on to take a timed State Board Licensure Examination before becoming a Registered Nurse.

Stonsby (1969) reviewed a study by the NLN which investigated the relationships of specific admission criteria to success in an ADN Program and to performance on the SBE. It was found that scores on the verbal section of the Scholastic Aptitude Test (SAT) and scores on the vocabulary and information subtests of the Wechsler Adult Intelligence Scale (WAIS) were related significantly to scores on the SBE.

Backman and Steindler (1971) supported these findings when they reported the use of the WAIS, the verbal and math tests of the SAT and high school rank as predictors of licensure examination scores. Miller, Feldhusen and Asher (1968) also found high correlations between success on the SBE and the SAT verbal score.

Haney et al. (1976) examined the success of student nurses from three ethnic groups on a state board certification examination using study behaviors, course grade point average and standardized achievement tests administered prior to nurses training as predictors. The achievement tests proved to be the best predictor across groups. Perez (1977) reported significant differences in the mean ACT scores of graduates who pass Board Exams as opposed to those who fail one or more parts of the exam.

A commonly agreed upon predictor of results on the licensure examination for Registered Nurses has been the National League for Nursing (NLN) Achievement Tests. Washburn (1980) found that NLN achievement test scores had

a highly significant correlation with SBTPE results for students in a diploma nursing program. Papcum (1971), Muhlenkamp (1971), Seither (1980), and others supported the use of the NLN Achievement Tests to predict student performance on the State Board Examinations.

Shelley, Kennamer, and Raile (1976), in a study of 117 nursing students, supported the view of educators who rely on the NLN achievement test scores to predict student performance on State Board Examinations. NLN and State Board Examination scores were correlated with other factors such as course grades resulting in "a higher degree of correlation between the NLN achievement test scores and the state board scores than was shown with course grades (Shelley et al.:1976:53)." It was concluded that the NLN scores "seemed a good indicator in advising students regarding pre-examination review for state boards (Shelley et al.:1976:55)."

MDCC's ADN Program has utlized the NLN Achievement Tests in the past as predictors for the licensure examinations. The exam is administered in the last semester of the nursing program and is used primarily for practice in taking standardized tests similar in content and format to the licensure exam and for identifying areas of study for the student prior to taking the NCLEX. Millican (1980), in an unpublished study of MDCC generic nursing students, determined that NLN Achievement Test scores showed a significant correlation with the State

Board Examination scores and were reliable indicators of student performance in regard to pre-examination review and advisement.

Richards (1977) found moderate to strong correlations between NLN achievement test scores and SBE scores (.59 to .76). Baldwin (1968) reported that NLN achievement test scores were significant predictors (.42 to .54) of SBE scores. Melcolm, Venn and Bausell (1981), in a study of a nursing baccalaureate program with an integrated curriculum, concluded that NLN achievement test scores tended to correlate the highest with SBE scores (Mean r=.53), although they stated results were slightly less impresive than those reported by Richards (1977).

Breyer (1984) examined the NLN Comprehensive Nursing Achievement Test as a predictor of performance on the NCLEX-RN. The NLN Comprehensive Exam was found to predict success on the NCLEX-RN within a reasonable margin of error.

Baldwin (1968:172) summarized the value of the NLN Achievement Tests as predictors of SBE scores:

> The established relationships between NLN Achievement Examination scores and State Board scores opened the way for the use of a meaningful technique in the guidance of students...When a student can be informed with a measure of confidence that her interval estimate in a given subject , based on her score in the NLN Achievement Examination, spans failing scores, she can scarcely be complacent about the inevitability of success.

Wolfie and Bryant (1978:312) pointed out that, "the link between NLN scores and SBE results is only one in a network of causal relationships," even though the NLN

Achievement Tests have been used as a primary predictor of student success on licensure examinations.

Wolfie and Bryant (1978:314) developed a causal model to provide a context for understanding the social process of nursing education and found that a nurse's intellectual ability and GPA were equal in importance to mastery of the subject matter in some areas of SBE test performance. They concluded that:

> Others have recognized that there is more to predicting SBE scores than performance on NLN tests. Measures of ability frequently appear, but they are often thrown into equations for their predictive qualities (Wolfie and Bryant: 1978:312).

The final section of the literature review addressed those studies which examine how academic achievement and performance during the program can be utilized to predict success on the licensure examination.

Literature Related to Grades as Predictors of Success on the Licensure Examination

The literature relevant to the present study reported a variety of investigations related to predicting success on the licensure examination using course grades and grade point averages. Brandt, Hastie and Schumann (1966:69) correlated nursing course grades and selected test scores with SBE results over a five-year period and concluded that grades received in nursing theory courses, scores on the Natural Science and Social Science tests, and scores on the NLN Basic Medical-Surgical Achievement Test were useful in

predicting performance on the SBE. No relationships between nursing practice and the SBE were found.

Taylor et al. (1963), in an earlier project, had reviewed studies of predictive factors for success on the SBE. No information was available concerning correlations between grade point averages and the SBE at that time. The group did find that the theory grade point average was mentioned in the literature as a better predictor for success than the clinical grade point average. Richards (1977), in a later study, achieved similar results reporting weaker correlations between SBE scores and clinical GPA compared to nursing grade point averages in theory.

Muhlenkamp (1971) found the grade point average at the end of the 7th semester in nursing to be the best predictor of state board scores. Perez (1977) reported grade point average upon completion of the freshman year in a baccalaureate nursing program to be a valid predictor of scores on the SBE.

Melcolm, Venn and Bausell (1981) correlated NLN Achievement Test Scores, grade point averages, and individual grades from selected nursing theory and clinical courses with the five sub-tests of the SBE. NLN achievement test scores tended to correlate highest with SBE scores (Mean r=.53) followed by graduating GPA (Mean r=.49), nursing theory grades (Mean r=.46), admitting GPA (Mean r=.42), and nursing clinical grades (Mean r=.20).

Dubs (1975), in a similar study, reported that students' three-year cumulative grade point averages and their nursing theory grades were the best predictors of success on State Board Examinations. Dubs (1975:62), going one step further, found employer ratings of these students after graduation had a higher correlation with students' nursing practice grades than with their nursing theory grades, indicating that nursing practice grades and not nursing theory grades, were a better predictor of actual performance in the work setting. Baldwin, Mowbray and Taylor (1968) found correlations between theory grades and state board scores to be too low to be useful in prediction.

Miller, Feldhusen and Asher (1968) correlated 22 variables with the SBE scores for 116 graduate nurses and found the overall grade average at the end of the nursing program to be one of the six variables most efficient in predicting SBE scores. Correlations between SBTPE scores and various course grades in nursing were found by Shelley, Kennamer and Raile (1976) to be insignificant in general. The highest correlation coefficients for nursing courses (.54) were obtained between the final grade averages and the SBTPE scores. Overall, there was a higher degree of correlation between the NLN achievement tests scores and the SBTPE scores than was shown with the course grades.

Quick (1985:13) examined successful and unsuccessful graduates on both the SBTPE and NCLEX and reported that:

> Compared to graduates who failed either licensing examination, graduates who passed the examinations had: higher mean raw scores on six NLN Achievement Tests, higher mean scores on the verbal and math Scholastic Aptitude Tests, and higher mean grade point averages in selected study fields which included mathematics, science, social science, nursing theory, and nursing clinical.

St. Thomas (1982) found a significant relationship between GPA and state board scores in a study of the relationship between the first semester grade point average and the state board exam scores of nursing students at Vermont College. Other researchers have demonstrated relationships between science courses and SBE results. Outtz (1979:39) examined the GPA's in college science courses of 110 black baccalaureate nursing students and determined that, "the cumulative GPA in college was the best predictor in all areas of the SBTPE." She recommended counseling sessions such as test-wise sessions for all students if the probable success or failure on the SBTPE could be determined in advance.

Seither (1980) found the GPA in the biological sciences to be the best predictor of each SBE score with the exception of psychiatric nursing. Bello (1977:154), in a study of 358 ADN students, reported a statistically significant relationship between college science course grades and results of the State Board Examination.

Colquhoun (1968) studied the relationship between the Ontario Nurse Registration Tests of three hundred new graduates and several criteria measures. Results were that

the average grade in nursing theory classes was the best predictor of success on the Registration Examination.

The coefficients of correlation between the SBE and cumulative GPA scores were found to be statistically significant in an interesting study conducted by Ledbetter (1968) with baccalaureate students. Correlations between the SBE scores and the corresponding final course grades for the five subtests of the exam were not significant. The author concluded that it appears grade point averages involve factors which make them valid predictors but which factors were not reflected by final course grades.

In summary, the use of GPA as a predictor of success in the nursing program and on the licensure exam was more widely indicated in the literature than the use of course grades. No studies were found concerning the failure or repetition of nursing courses and outcome on the NCLEX. The literature reviewed concerned the prediction of success in nursing school and on the licensure examination. This study was to determine whether the data on the students in the MDCC ADN Program was consistent with that reported in the literature.

Chapter 3

Procedures and Methodology

This was an ex post facto study of the relationships among academic variables. The independent or predictor variables were academic achievement as represented by passing or repeating a nursing course and nursing grade point averages for both theory and clinical courses. The dependent or criterion variable was success in passing the NCLEX-RN. The purpose of the study was to determine if academic achievement in nursing courses for this program significantly predicts success on the first writing of the NCLEX-RN.

Students who withdrew completely from the program were not included in the study. Graduates of the program over a two-year period and their success or failure on the first writing of the NCLEX-RN was the subject of this study.

Procedure for Collecting the Data

The population for the study was all generic ADN students (N=254) that graduated from the program over a two-year period from Fall 1983 to Fall 1985. The official transcripts of the graduates were obtained from the Registrar's Office at MDCC Medical Center Campus and the data compiled and categorized. A data spread sheet was used to assist in this procedure. Results of the NCLEX-RN for

each student in regards to passing or failing were obtained from the Florida State Board of Nursing and from college records.

Background information that was obtained from the students' transcripts included the student's age, sex, ethnicity, educational level and the number of college credits earned prior to entering the nursing program. These demographic and educational characteristics were presented in table format in order to further delineate the population under study. Other factors such as health and social problems or personality characteristics could not be identified in the transcripts or controlled for in the study.

Developmental tests were required of all students on admission into the college. Those were not included as variables in the study since students were required to submit to remediation prior to entering the nursing program in order to obtain a minimal level of competency in the basic skills.

Treatment of the Data

The difference between success and failure on the NCLEX-RN of ADN graduates based on selected predictor variables was investigated in this study. The subject for this study was a non-randomized total population of generic ADN graduates of MDCC located in Miami, Florida.

Ten null hypotheses were formulated based on the ten predictor variables listed in Table 1 and the criterion variable of of success or failure on the NCLEX.

Table 1

Independent or Predictor Variables for the Fall 1983-Fall 1985 Graduates of the ADN Program

Variable	Null Hypothesis
Nursing Theory GPA	1
Nursing Clinical GPA	2
Passing All Nursing Theory Courses without a Repeat	3
Repeating Nursing Theory Once	4
Repeating Nursing Theory Twice	5
Repeating Nursing Theory Three or More Times	6
Passing All Nursing Clinical Courses without a Repeat	7
Repeating Nursing Clinical Once	8
Repeating Nursing Clinical Twice	9
Repeating Nursing Clinical Three or More Times	10

The grades received in all nursing theory and clinical courses were recorded on the data spread sheet for each individual student. Theory grades were primarily determined through objective tests while clinical grades were based upon faculty assessment of the student's application of theory in the clinical setting.

The grading system under which the subjects were evaluated by their instructors consisted of the standard grades of A, B, C, D and F designations on a numerical 0-4.0 scale. Any grade below "C" in the nursing program is considered failure. Letter grades were assigned the following numerical values in order to calculate the GPA for both theory and clinical courses:

A= 4 points
B= 3 points
C= 2 points
D= 1 point
F= 0 points

A repeated course was given the appropriate value and counted in the GPA accordingly. A student must have obtained a "C" or better in a repeated nursing course in order to remain in the program.

Students were then placed into each category or predictor variable according to their theory and clinical outcomes. Every student was placed into two groups, one for theory and one for clinical. An example of this was a student who passed all of the nursing theory courses and repeated two nursing clinical courses was placed into the corresponding theory and clinical categories. A withdrawal from a nursing course counted as one enrollment in that course. After all of the students were categorized each predictor variable was analyzed in relationship to passing or failing the NCLEX as stated in the corresponding null hypothesis.

Absolute frequencies and percentiles were determined for the data prior to application of the statistical treatment. The data on the ADN students in this study was subjected to a non-parametric chi-square (x2) analysis to determine whether the relationships between the independent variables and the two groups (success on the NCLEX or failure on the NCLEX) could be considered significant. A level of significance of .05 was used throughout the study. The chi-square analysis was then applied to the ten null hypotheses formulated in this study. If the computed x2 value was within the statistical table of critical values at the .05 level, the null hypothesis was not rejected. If the computed x2 value exceeded the statistical table critical values at the .05 level the null hypothesis was rejected.

The next step in the treatment of the data was to calculate coefficients of correlation to determine if there was a relationship between any of the ten independent variables and the dependent variable of success or failure on the NCLEX. The statistical method used was the Pearson correlation coefficient. The reliability of the coefficients of correlation was tested against the null hypotheses that the population r was zero. Correlation coefficients for all of the variables under study were determined and a correlation matrix was produced. The criteria used to interpret the strength of the calculated coefficients of correlation were taken from Best (1977:260).

Coefficients between .00 and .20 were considered negligible; between .20 and .40 low; between .40 and .60 moderate; between .60 and .80 substantial; and between .80 and 1.00 high. The statistical analysis of the data was done using the Statistical Package for the Social Sciences (Nie:1975).

CHAPTER 4

PRESENTATION OF THE RESULTS

Data were collected for 254 nursing students who graduated from the MDCC Generic ADN Program from Fall 1983 to Fall 1985. The 254 students were divided into two separate groups consisting of 219 students who successfully passed the NCLEX and 35 students who failed to pass the NCLEX. Data were gathered for every student in the study group regarding the following: sex; age; previous MDCC college credits; educational level prior to acceptance into the nursing program; number of repeated nursing theory courses; number of repeated nursing clinical courses; nursing theory grade point average based on a scale of zero to four and nursing clinical grade point average based on a scale from zero to four. Since data were not available on the ethnicity of each individual student, the ethnicity of each graduating class was reported.

A summary of the data revealed pertinent information regarding demographic and educational characteristics of the 254 graduates. Table 2 shows that twenty-six of the graduates were male and 228 of the graduates were female. Seventy-seven of the graduates were below twenty-two years of age. Nearly half of all the graduates (N=106) were from 23 to 32 years of age. Thirty-five were in the 33-37 year age range, twenty-four were in the 38 to 42 year

TABLE 2

Student Profile for Fall 1983-Fall 1985
ADN Graduates

Characteristic	Number	Characteristic	Number
Sex		Previous MDCC College Credits	
Male	26	0-15	56
Female	228	16-30	50
		31-45	68
		46-60	30
Age		60 plus	50
18-22	77		
23-27	52	Educational Level	
28-32	54		
33-37	35	HS Equivalency	12
38-42	24	HS Diploma	128
43 plus	12	College Level Certificate	5
Ethnicity		Non-Degree College Transfer	60
Non-Hispanic White Female	123	Associate Degree	34
Hispanic Female	66	Bachelors Degree	12
Black Female	32	Masters Degree	2
Asian Female	4	Doctorate	1
Other Female	3		
Non-Hispanic White Male	12		
Hispanic Male	11		
Black Male	3		

N=254

age range and twenty-four were in the 38-42 year age range. There were twelve students over 43 years old.

Educational characteristics obtained from the transcripts of the 254 graduates revealed that previous to admittance into the nursing program, 140 students had earned a high school diploma, with twelve of those having taken the high school equivalency exam. Five had obtained a college level certificate and sixty of the students had transferred in accumulated college credits. Forty-nine students had previous academic degrees which included thirty-four with associate degrees, twelve with bachelors degrees, two with masters degrees and one with a doctorate degree.

Prior to entering the nursing program and taking their first nursing course, fifty-six students had obtained fifteen or fewer MDCC college credits; fifty had obtained from 16-30 MDCC credits; sixty-eight had obtained from 31-45 MDCC credits; thirty had obtained from 46-60 MDCC credits and fifty had obtained over 60 MDCC credits. The student profile by graduating class is shown in Appendix C.

Ethnicity was reported for the ethnic categories delineated by the nursing program as part of the student admissions survey. Of the 228 female graduates, 123 were non-Hispanic white, sixty-six were Hispanic, thirty-two were black, four Asian and three were categorized as "other." Of the twenty-six male graduates, twelve were non-Hispanic white, eleven were Hispanic and three were black. None of the males were in the category of "other." Table 3 shows the ethnic categories by graduating class.

Table 3

Student Ethnic Profile by Graduating Class
Fall 1983-Fall 1985

Ethnic Category	Graduating Class											
	Fall 1983 N=45		Winter 1984 N=37		Fall 1984 N=54		Winter 1985 N=48		Spring 1985 N=25		Fall 1985 N=45	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Anglo Female	24	53.3	16	43.3	30	55.4	20	41.7	11	44.0	22	48.9
Black Female	4	8.9	5	13.5	3	5.6	9	18.8	4	16.0	7	15.6
Hispanic Female	10	22.2	9	24.3	15	27.8	14	29.2	6	24.0	12	26.7
Asian Female	1	2.2	2	5.4	--	--	--	--	1	4.0	--	--
Other Female	1	2.2	--	--	1	1.9	1	2.0	--	--	--	--
Anglo Male	2	4.5	1	2.7	2	3.7	3	6.3	2	8.0	2	4.4
Black Male	1	2.2	1	2.7	--	--	1	2.0	--	--	--	--
Hispanic Male	2	4.5	3	8.1	3	5.6	--	--	1	4.0	2	4.4
Totals	45	100.0	37	100.0	54	100.0	48	100.0	25	100.0	45	100.0

N=254

Absolute frequencies and percentiles were determined for the data prior to application of the statistical treatment. Table 4 shows the comparison of graduate characteristics by NCLEX outcomes. Males composed the highest percentage of failures as a group with a 26.9 percent failure rate compared to females with a 12.3 percent failure rate.

The largest number of graduates (N=77) fell into the 18-22 year age group. The failure rate was also highest for this group at 19.5 percent. Graduates in the 33-37 year age group had the lowest percentage of failures at 5.7 percent. Graduates in the 38-42 year age group and the forty-three and over age group had identical failure rates of 8.3 percent.

The largest number of graduates (N=68) had accumulated 31-45 MDCC college credits prior to entering the nursing program. The group with sixty or more MDCC credits had a failure rate of 30 percent. This was the highest failure rate for any category of students with previous MDCC credits. The 16-30 credit category had the lowest failure rate at 6 percent.

The largest number of graduates (N=128) had a high school diploma as their highest level of education prior to entering the nursing program. This category of educational level had a 10.9 percent failure rate on the NCLEX as opposed to the students in the high school equivalency category who had a 33.3 percent failure rate on the NCLEX.

Table 4

Comparison of ADN Graduate Characteristics
Fall 1983-Fall 1985 by NCLEX Outcomes

	Failed NCLEX N=35		Passed NCLEX N=219		Total	
Characteristic	No.	%	No.	%	No.	%
Sex						
Male	7	26.9	19	73.1	26	100.0
Female	28	12.3	200	87.7	228	100.0
Age						
18-22	15	19.5	62	80.5	77	100.0
23-27	7	13.5	45	86.5	52	100.0
28-32	8	14.8	46	85.2	54	100.0
33-37	2	5.7	33	94.3	35	100.0
38-42	2	8.3	22	91.7	24	100.0
43 Plus	1	8.3	11	91.7	12	100.0
Previous MDCC College Credits						
0-15	7	12.5	49	87.5	56	100.0
16-30	3	6.0	47	94.0	50	100.0
31-45	7	10.3	61	89.7	68	100.0
46-60	3	10.0	27	90.0	30	100.0
60 Plus	15	30.0	35	70.0	50	100.0
Educational Level						
HS Equivalency	4	33.3	8	66.7	12	100.0
HS Diploma	14	10.9	114	89.1	128	100.0
College Level Certificate	2	40.0	3	60.0	5	100.0
Non-Degree College Transfer	6	10.0	54	90.0	60	100.0

Table 4 (Continued)

Characteristic	Failed NCLEX N=35		Passed NCLEX N=219		Total	
	No.	%	No.	%	No.	%
Associate Degree	8	23.5	26	76.5	34	100.0
Bachelors Degree	1	8.3	11	91.7	12	100.0
Masters Degree	-	-	2	100.0	2	100.0
Doctorate	-	-	1	100.0	1	100.0

N=254

Students in the college level certificate category had the highest failure rate at 40 percent. The non-degree college transfer category had a failure rate of 10 percent.

Students who entered nursing with a bachelors degree had an 8.3 percent failure rate for the NCLEX. There were no failures on NCLEX for students with a masters or doctorate degree. Students in these two categories comprised only 1.9 percent of the total study group.

Table 5 refers to the theory grade point average (GPA) of all students in the study group. Data are reported as absolute, relative and cumulative frequencies. It can be seen that the "success" group achieved higher GPA's for nursing theory courses than did the "failure" group.

While 37.9 percent of the "success" group had a nursing theory GPA of less than 2.5, 85.7 percent of the "failure" group had less than a 2.5 GPA. One hundred percent of the "failure" group and 81.3 percent of the success" group had less than a 3.0 GPA in nursing theory. The largest percentage of students in the "failure" group (54.3%) were in the 2.01-2.5 GPA category. The largest percentage of students in the "success" group (43.3%) fell into the 2.51-3.0 GPA category.

Table 5

Comparison of Nursing Theory GPA of 254 Graduates Included in the Study Group by Success or Failure on the NCLEX

	Success Group N=219			Failure Group N=35		
Nursing Theory GPA	No.	Relative Frequency (Percent)	Cumulative Frequency (Percent)	No.	Relative Frequency (Percent)	Cumulative Frequency (Percent)
1.51-2.0	11	5.0	5.0	11	31.4	31.4
2.01-2.5	72	32.9	37.9	19	54.3	85.7
2.51-3.0	95	43.3	81.3	5	14.3	100.0
3.01-3.5	25	11.4	92.7	0	--	100.0
3.51-4.0	16	7.3	100.0	0	--	100.0
Total	219	100.0	100.0	35	100.0	100.0

N=254

Table 6 refers to the clinical GPA of all students and shows that the "failure" group achieved lower GPA's for nursing clinical courses as compared to the "success" group. Sixty percent of the "failure" group received less than a 3.0 GPA whereas 27.4 percent of the "success" group received less than a 3.0 GPA in nursing clinical. The largest percentage of students in the "success" group (47.9%) were in the 3.01-3.5 GPA category, whereas the largest percentage of students in the "failure" group (51.4%) were in the 2.51-3.0 GPA category.

Table 6

Comparison of Nursing Clinical GPA of 254 Graduates Included in the Study Group by Success or Failure on the NCLEX

	Success Group N=219			Failure Group N=35		
Nursing Clinical GPA	No.	Relative Frequency (Percent)	Cumulative Frequency (Percent)	No.	Relative Frequency (Percent)	Cumulative Frequency (Percent)
1.51-2.0	1	0.5	0.5	0	--	--
2.01-2.5	6	2.7	3.2	3	8.6	8.6
2.51-3.0	53	24.2	27.4	18	51.4	60.0
3.01-3.5	105	47.9	75.3	12	34.3	94.3
3.51-4.0	54	24.7	100.0	2	5.7	100.0
Total	219	100.0	100.0	35	100.0	100.0

N=254

Table 7 shows that for each individual theory course, the greatest number of students repeated the Nursing 3 Multi-Resources theory course. Sixty-seven students repeated the course, with 26.9 percent failing the NCLEX and 73.1 percent passing the NCLEX. Nursing 2 Multi-Resources held the next highest number of repeaters for a theory course (N=54) with 27.8 percent failing the NCLEX and 72.2 percent passing the NCLEX. For the pediatric course, thirty-six students repeated theory with 30.6 percent of those students failing the NCLEX and 69.4 percent passing the NCLEX.

Table 7

Comparison of Nursing Theory Courses Repeated for All Students and Success or Failure on the NCLEX

Course Repeated	Failed NCLEX No.	%	Passed NCLEX No.	%	Total No.	%
N-1	4	50.0	4	50.0	8	100.0
N-2MR	15	27.8	39	72.2	54	100.0
N-2 Comm.	5	35.7	9	64.3	14	100.0
N-3MR	18	26.9	49	73.1	67	100.0
Peds	11	30.6	25	69.4	36	100.0
N-4MR	4	23.5	13	76.5	17	100.0
OB	4	30.8	9	69.2	13	100.0
N-5	2	100.0	0	--	2	100.0

N=254

Table 8 refers to the number and percentage of students in the "success" and "failure" groups that passed each nursing theory course without a repeat. Table 8 indicates that the percentage of students passing or failing the NCLEX remained fairly constant for every nursing theory course passed without a repeat.

Table 8

Comparison of Nursing Theory Courses Passed for All Students And Success or Failure on the NCLEX

Course Passed	Failed NCLEX No.	%	Passed NCLEX No.	%	Total No.	%
N-1	31	12.6	215	87.4	246	100.0
N-2MR	20	10.0	180	90.0	200	100.0
N-2 Comm.	30	12.5	210	87.5	240	100.0
N-3MR	17	9.1	170	90.9	187	100.0
Peds	24	11.0	194	89.0	219	100.0
N-4MR	31	13.1	206	86.9	237	100.0
OB	31	12.9	210	87.1	241	100.0
N-5	33	13.1	219	86.9	252	100.0

N=254

It was found after examining each individual clinical course that the the greatest number of students failed the Nursing 3 Multi-Resources course. Table 9 shows that of the thirty-three students that repeated this course, 30.3 percent failed NCLEX and 69.7 percent passed the NCLEX.

Eighteen students repeated the Nursing 4 Multi-Resources clinical course, with 11.1 percent failing NCLEX and 88.9 percent passing the NCLEX. Fourteen students repeated Nursing 2 Multi-Resources clinical, with 21.4 percent failing NCLEX and 78.6 percent passing NCLEX.

Table 9

Comparison of Nursing Clinical Courses Repeated for All Students and Success or Failure on the NCLEX

Course Repeated	Failed NCLEX No.	%	Passed NCLEX No.	%	Total No.	%
N-1	1	33.3	2	66.7	3	100.0
N-2MR	3	21.4	11	78.6	14	100.0
N-2Comm.	0	--	5	100.0	5	100.0
N-3MR	10	30.3	23	69.7	33	100.0
Peds	0	--	5	100.0	5	100.0
N-4MR	2	11.1	16	88.9	18	100.0
OB	1	12.5	7	87.5	8	100.0
N-5	0	--	1	100.0	1	100.0

N=254

Table 10 refers to the number and percentage of students in the "success" and "failure" groups that passed each nursing clinical course without a repeat.

Table 10

Comparison of Nursing Clinical Courses Passed for All Students and Success or Failure on the NCLEX

Course Passed	Failed NCLEX No.	%	Passed NCLEX No.	%	Total No.	%
N-1	34	13.5	217	86.5	251	100.0
N-2MR	32	13.3	208	86.7	240	100.0
N-2Comm	35	14.1	214	85.9	249	100.0
N-3MR	25	11.3	196	88.7	221	100.0
Peds	35	14.1	214	85.9	249	100.0
N-4MR	33	14.0	203	86.0	236	100.0
OB	34	13.8	212	86.2	246	100.0
N-5	35	13.8	218	86.2	253	100.0

N=254

Table 10 indicates that the percentage of students passing or failing the NCLEX remained fairly constant for every clinical course passed with no repeats. The total number of students passing each clinical course is reported Table 10.

The number of nursing theory courses repeated were examined in regards to NCLEX outcome in order to gain familiarity with the data prior to applying the statistical treatment. Table 11 shows that a higher percentage of students who had no repeats in a nursing theory course passed the NCLEX (96.8%) than failed the NCLEX (3.2%).

The largest number of students (N=126) fell into this category with 49.6 percent of all students having no repeats in nursing theory.

Seventy-three students repeated one theory course, with 16.4 percent failing the NCLEX and 83.6 percent passing the NCLEX. This category held the next highest number of students (N=73), or 28.7 percent of the total number of students in the study group.

Thirty-four students repeated two theory courses, with 23.5 percent failing the NCLEX and 76.5 percent passing the NCLEX. This category held the next highest number of students (N=34), after the one repeat category, for theory outcomes. The least number of students was in the three or more theory repeats category. Twenty-one students repeated a nursing theory course three or more times. There were 52.4 percent failing the NCLEX and 47.9 percent passing the NCLEX out of those twenty-one students. This category held the lowest number of students for theory outcomes but had the highest percentage of failures on the NCLEX for the theory category. Table 11 shows the number of repeated nursing theory courses for both the "success" and "failure" groups on the NCLEX. It also shows the total number of students for each theory outcome.

Table 12 compares nursing theory course repeats by "success" or "failure" group on the NCLEX. It shows that the highest percentage of students in the "success"

Table 11

Comparison of Success or Failure on the NCLEX and the Number of Repeated Nursing Theory Courses

Theory Outcome	Failure Group No.	%	Success Group No.	%	Total No.	%
No Repeats	4	3.2	122	96.8	126	100.0
One Repeat	12	16.4	61	83.6	73	100.0
Two Repeats	8	23.5	26	76.5	34	100.0
Three or More Repeats	11	52.4	10	47.6	21	100.0
Total	35	--	219	--	254	100.0

N=254

group (55.7%) did not repeat a nursing theory course. The lowest percentage of students in the "success" group (4.6%) repeated three or more nursing theory courses.

The highest percentage of students in the "failure" group (34.3%) had repeated one theory course or had repeated nursing theory three or more times (31.4%). The lowest percentage of students in the "failure" group (11.4%) had not repeated a nursing theory course as shown in Table 12.

Table 12

Comparison of Nursing Theory Course Repeats by Success or Failure Group on the NCLEX

	Success Group N=219		Failure Group N=35	
Course Repeats	No.	%	No.	%
No Repeats	122	55.7	4	11.4
One Repeat	61	27.8	12	34.3
Two Repeats	26	11.9	8	22.9
Three or More Repeats	10	4.6	11	31.4
Total	219	100.0	35	100.0

N=254

Next, the number of nursing clinical courses repeated were examined. Table 13 shows that the highest percentage of students that were in the no repeats category for clinical, passed the NCLEX with an 89 percent rate rather than failed the NCLEX with an 11 percent rate. The largest number of students (N=181) fell into the no repeat clinical category with 71.7 percent of all students in the study group having not repeated a clinical course.

The students that repeated one clinical course had a 21.3 percent failure rate on the NCLEX and a 78.7 percent pass rate. This category held the next highest number of

students (N=61) or 24 percent of the total number of students in the study group. Students repeating two clinical courses had a 20 percent failure rate on the NCLEX and an 80 percent pass rate. This group of students (N=10) was relatively small and only accounted for 3.9 percent of the total number of students in the study group. There were only two students or 0.8 percent of the total study group falling into the category of repeating three or more clinical courses. This group had a 100 percent pass rate on the NCLEX as shown in Table 13.

Table 13

Comparison of Success or Failure on the NCLEX and the Number of Repeated Nursing Clinical Courses

Clinical Outcome	Failure Group No	%	Success Group No.	%	Total No.	%
No Repeats	20	11.0	161	89.0	181	100.0
One Repeat	13	21.3	48	78.7	61	100.0
Two Repeats	2	20.0	8	80.0	10	100.0
Three or More Repeats	0	--	2	100.0	2	100.0
Total	35	--	219	--	254	100.0

N=254

Table 14 compares nursing clinical course repeats by "success" or "failure" group on the NCLEX. It shows that the highest percentage of students in the "success" group

(73.5%) did not repeat a nursing clinical course. The lowest percentage of students in the "success" group (0.9%) repeated three or more nursing clinical courses.

The highest percentage of students in the "failure" group (57.1%) also had not repeated a clinical nursing course. The lowest percentage of students in the "failure" group (5.7%) had repeated nursing clinical three or more times.

Table 14

Comparison of Nursing Clinical Course Repeats by Success or Failure Group on the NCLEX

	Success Group N=219		Failure Group N=35	
Course Repeats	No.	%	No.	%
No Repeats	161	73.5	20	57.1
One Repeat	48	22.0	13	37.1
Two Repeats	8	3.6	2	5.7
Three or More Repeats	2	0.9	0	--
Total	219	100.0	35	99.9

N=254
Note: Due to rounding of percents, total may not equal 100.

The results of the chi square analyses based on theory and clinical outcomes are summarized in Table 15. The critical values taken from the Fisher and Yates x2 Tables

denoted the level of significance by p and the degrees of freedom represented by df. The null hypotheses for which the calculated x2 value exceeded its critical x2 value were rejected at the .05 level of significance. The null hypotheses for which the calculated x2 value was less than its critical x2 value, were not rejected at the .05 level of significance.

Table 15

Summary of Results of Chi Square Test

Item	Calculated Chi Square	df	Critical Chi Square	Conclusion
Nursing Theory GPA	41.19427	4	9.488	Reject NH
Nursing Clinical GPA	17.19369	4	9.488	Reject NH
No Repeats Nsg. Theory	21.46666	1	3.841	Reject NH
One Repeat Nsg. Theory	.33596	1	3.841	Not Reject
Two Repeats Nsg. Theory	2.26481	1	3.841	Not Reject
Three or More Repeats Nsg. Theory	25.27904	1	3.841	Reject NH
No Repeats Nsg. Clinical	3.42040	1	3.841	Not Reject
One Repeat Nsg. Clinical	3.04440	1	3.841	Not Reject
Two Repeats Nsg. Clinical	.01305	1	3.841	Not Reject
Three or More Repeats Nsg. Clinical	.00000	1	3.841	Not Reject

p<.05

The statistical test of chi square analysis was applied to the data and it was found that for the independent variables of no repeated nursing theory courses and for three or more repeats in nursing theory, the calculated x2 values exceeded the critical value of x2; therefore, the null hypotheses were rejected. There is a significant difference between students that do not repeat a theory course and their outcome on the NCLEX. More students that do not repeat a nursing theory course pass the NCLEX than students that repeat. There is also a significant difference between students that repeat a theory course three or more times and their outcome on the NCLEX. More students that repeat a theory course three or more times do not pass the NCLEX than students that do not repeat or that repeat fewer times.

The null hypotheses for the remainder of the theory and clinical course outcomes were not rejected since the calculated x2 values for all of those independent variables were less than their critical x2 values. There is no significant difference in students that have repeated a theory course once; repeated a theory course twice; have not repeated a clinical course; repeated a clinical course once; repeated a clinical course twice; repeated a clinical course three or more times and their outcome on the NCLEX.

The chi square test was applied to the null hypotheses for nursing theory and clinical grade point averages. Grade point averages were categorized as follows: 1.51-2.0;

2.01-2.5; 2.51-3.0; 3.01-3.5; and 3.51-4.0. The null hypotheses for both of these academic independent variables were rejected since their calculated x2 values exceeded their critical x2 values. The chi square test indicated that there was a significant difference in nursing theory and nursing clinical grade point averages of successful and unsuccessful students on the NCLEX. More students who had high grade point averages passed the NCLEX than students with lower grade point averages in both theory and clinical.

The study was designed to test the null hypotheses that the number of repeats in theory and clinical courses and students' theory and clinical nursing GPA's would show no significant relationship to success on the NCLEX. Pearson correlation coefficients were calculated to determine if there was a relationship between any of the ten academic variables and the dependent variable of success or failure on the NCLEX. The reliability of the coefficients of correlation was tested against the null hypothesis that the population r was zero. The following criteria were established according to Best (1977:260):

Coefficient (r)	Relationship
.00 to .20	Negligible
.20 to .40	Low
.40 to .60	Moderate
.60 to .80	Substantial
.80 to 1.00	High

Shown in Table 16 are the Pearson correlation coefficients between each independent variable and the

dependent variable of success or failure on the NCLEX. The highest correlation was between nursing theory GPA and success or failure on NCLEX with a coefficient of 0.3812, indicating a low to moderate relationship. The next highest correlation with NCLEX outcome was for no repeats in nursing theory and the NCLEX (r=.3021) and for GPA in clinical and the NCLEX (r=.2184), both indicating a low but significant relationship to NCLEX outcome. Three or or more repeats in nursing clinical had a negative but significant correlation with NCLEX outcome. The remainder of the variables had a negligible correlation with NCLEX.

Table 16

Correlation Coefficients of Selected Variables to Success or Failure on the NCLEX

Item	Coefficient of Correlation (r values)
Nursing Theory GPA	.3812
Nursing Clinical GPA	.2184
No Repeats Nsg. Theory	.3021
One Repeat Nsg. Theory	-.0490*
Two Repeats Nsg. Theory	-.1112*
Three or More Repeats Nsg. Theory	-.3362
No Repeats Nsg. Clinical	.1287*
One Repeat Nsg. Clinical	-.1228*
Two Repeats Nsg. Clinical	-.0365*
Three or More Repeats Nsg. Clinical	.0356*

*p<.05 (All other values <.01)

Correlation coefficients for all of the variables under study were determined using the Pearson correlation coefficients (see Appendix D). The GPA in nursing clinical had a moderate correlation with no repeats in nursing clinical (r=.4524) and no repeats in nursing theory (r=.4160). The GPA in nursing clinical had a moderate to substantial correlation with GPA in nursing theory (r=.5789).

The GPA in nursing theory had a moderate correlation with no repeats in nursing theory (r=.5690) and a low correlation with no repeats in nursing clinical (r=.2687). No repeats in theory and no repeats in clinical had a moderate correlation of 0.3221. Repeating three or more theory courses and repeating three or more clinical courses had a low but significant correlation (r=.2967). None of the remaining correlation coefficients between any of the remaining variables were significant. Their coefficients were between .05 and .23 or were negatively related.

CHAPTER 5

INTERPRETATION, CONCLUSIONS AND RECOMMENDATIONS

Interpretation

The purpose of the project was threefold: to investigate the relationship between the NCLEX and academic achievement in theory and clinical practice in nursing school; to investigate the relationship between the NCLEX and course repeats in nursing school; and to identify if any particular nursing course was predictive of NCLEX outcome. The independent variables included nursing theory and clinical grade point averages and the number of repeated theory and clinical courses. The dependent variable was passing or failing the NCLEX for registered nurses.

Pertinent demographic and educational characteristics were identified for all graduates in the study group. Graduate characteristics were used to further delineate the population under study and to provide information on both the "success" and "failure" groups on the NCLEX. It was found that nearly three-fourths of all the graduates were from 18-32 years of age and most were female (N=228). The largest ethnic group represented was the non-Hispanic white student (N=135). The majority of students (N=140) entered the program with a minimum of a high school diploma.

The highest failure rates on the NCLEX for the study group were for males and students with sixty or more MDCC college credits prior to entering nursing. Accumulated credits may have been due to a repetition of non-nursing courses or pre-requisite courses in order to obtain the minimum required grade of "C" for program entry.

There was a higher failure rate on the NCLEX for students who had achieved the high school general equivalency diploma as opposed to students who had achieved a high school diploma. An even higher failure rate was reported for students holding a college level certificate. The failure rate on the NCLEX dropped for students that entering nursing with a bachelor's degree or higher.

The levels of academic achievement for the "success" and "failure" groups on the NCLEX differed in regards to grade point average for both theory and clinical courses. Students in the "success" group had achieved higher GPA's for nursing theory than students in the "failure" group. No students in the "failure" group achieved higher than a 3.0 GPA in nursing theory. The majority of students in the "success" group, or 72.6 percent, received over a 3.0 GPA in nursing clinical. The majority of the "failure" group, or 60 percent, received under a 3.0 GPA in nursing clinical. The overall GPA's reported for clinical were higher than for theory. This could be due to the subjectivity involved in evaluating students for clinical courses as compared to theory courses. The literature shows

evidence that clinical grades have been less predictive of success in nursing than theory grades (Melcolm: 1981).

The Nursing 3 Multi-Resources theory course was the theory course most often repeated by students (N=67). The failure rate on the NCLEX for students repeating this course was high at 26.9 percent when compared to the NCLEX failure rate of 8-10 percent nationally (AJN: 1983: 1122). The Nursing 2 Multi-Resources theory course also had a large number of repeaters (N=54) with a reported failure rate of 27.8 percent on the NCLEX. NCLEX failure rates for students passing each theory course without a repeat remained close to the national norm at 9-13 percent.

The Nursing 3 Multi-Resources clinical course remained the individual clinical course most often repeated by students (N=33). The failure rate on the NCLEX for students repeating this course was high at 30.3 percent when compared to the national norm. The Nursing 4 Multi-Resources clinical course also had a large number of repeaters (N=18) but a lower failure rate for the NCLEX at 11 percent. This indicates that the Nursing 4 course is not as discriminating for NCLEX failures as the Nursing 3 course.

The Nursing 2 Multi-Resources course also had a high number of repeaters for clinical (N=14) and a high failure rate for the NCLEX at 21.4 percent. The failure rate on the NCLEX for students passing each clinical course ranged from 11-14 percent. This was higher than the national norm and higher than the failure rate on the NCLEX for students

passing each theory course. This indicates that nursing clinical outcomes are less discriminating for the NCLEX than nursing theory outcomes. Approximately 60 percent of all students in the program did not repeat a nursing course. More students repeated theory courses (N=128) than repeated clinical courses (N=73).

Students with no repeats in theory courses had a higher success rate on the NCLEX at 96.8 percent than students that repeated one, two and three or more theory courses. Students with three or more repeats in nursing theory had the lowest success rate on the NCLEX at 47.6 percent than students with no repeats, one repeat or two repeats in theory courses.

Students with no repeats in clinical courses had a higher success rate on the NCLEX at 89 percent than all other students for clinical course outcomes except for the category of three or more clinical repeats. The two students with three or more clinical repeats passed the NCLEX. The small number of students in this category make it difficult to form any conclusions regarding the data.

Ten null hypotheses were analyzed in the study by use of the chi-square test. The chi-square analysis proved that based on a level of significance set at $p<.05$, there was a significant difference in nursing theory GPA, nursing clinical GPA, no repeats in nursing theory and three or more repeats in nursing theory between the students who passed the NCLEX and those who failed the

NCLEX. There was no significant difference in repeating one nursing theory, repeating two nursing theories, repeating no nursing clinicals, repeating one nursing clinical, repeating two nursing clinicals, or repeating three nursing clinicals between students who passed the NCLEX and students who failed the NCLEX.

Pearson correlation coefficients were calculated to determine the relationship between the dependent variable of success or failure on the NCLEX and each of the ten independent variables. The tests revealed that the correlation between nursing theory GPA, nursing clinical GPA, no repeats in nursing theory and the NCLEX were all of low to moderate significance. The correlation between three repeats in nursing theory and the NCLEX indicated a low but significant negative relationship to the NCLEX.

There was a significant positive correlation between GPA in nursing clinical; no repeats in nursing clinical; no repeats in nursing theory and GPA in nursing theory. There was a a significant positive correlation between GPA in nursing theory and no repeats in nursing theory. Significant positive correlations were also found between the variables of no repeats in nursing theory and no repeats in nursing clinical and between repeating three or more theory courses and repeating three or more clinical courses The independent variables in the nursing program which may have influenced student success on the NCLEX were found to

be GPA in theory, GPA in clinical, no repeats in theory and repeating three or more theory courses. Other variables under study did not appear to have any significant relationship with success or failure on the NCLEX.

Conclusions

The results of this study are consistent with other studies in the literature that support the hypotheses that grades and grade point averages, specifically in nursing theory, are significant factors in relation to success on the NCLEX (Richards:1977). Theory GPA was mentioned in the literature as a better predictor for success on the State Board Exam (NCLEX) than clinical GPA (Taylor:1963).

The findings of this study support the fact that a positive correlation does exist between the academic characteristics of grades and grade point average and success on the NCLEX. Although no studies could be found relating to repeated theory and clinical courses, a significant relationship does exist between nursing theory GPA, nursing clinical GPA, no repeats in nursing theory courses, repeating nursing theory three or more times and NCLEX outcome for the ADN student in the MDCC program.

Correlations for nursing theory grades and nursing clinical grades, represented by theory and clinical GPA in this study, were consistent with the findings of Melcolm et al. (1981) which correlated theory and clinical grades with the State Board Exam. Such academic characteristics can be used to identify students in the program who need

special counseling and remediation. Information on students at high risk to fail the NCLEX, such as students with three repeats in nursing theory, may be helpful in lowering attrition in the ADN Program and in minimizing NCLEX failure on the first attempt if remediation can occur. Students with these deficiencies need to be directed by faculty and academic advisors in ways which enhance the learning process. It is necessary to address students who exhibit shortcomings while "in program" versus having them attempt and fail at their first NCLEX writing.

Recommendations

Based on the results of this major applied research project the recommendations are that:

1. Designated nursing faculty should counsel all students who fail or withdraw from a nursing course. Students that fail theory and those that fail clinical have particular and different learning needs. It is necessary to identify why a student failed an examination or withdrew from a course.

2. The reason for the failure should be documented and serve as a basis for prescribing the appropriate remediation and support. An example of this would be that if failure was due to a lack of test-taking skills or test anxiety, the student could be directed to the routine courses offered by continuing education in this area. If failure was due to a

lack of comprehension of the material, the student could be referred for tutoring or to the Learning Resources Center to upgrade reading and/or language skills. A cause of failure in a clinical course is often a lack of psychomotor skills which could be practiced in an on-campus simulated lab setting. The faculty member should be knowledgeable in the prescriptive treatments available to the student.

3. Separate guidelines should be established for the number of repeats allowed for theory and clinical courses. It is recommended that the number of theory repeats be limited to three and that a student be allowed to repeat each clinical course one time.

4. A permanent study laboratory should be established for nursing students who have demonstrated previous difficulties with coursework in the nursing program. This course could be adapted from a current two credit course taught in the first semester of nursing for high risk students that failed or repeated multiple science courses. This course would be open to all nursing students each semester but would be required for students identified as high risk in the program. The course would assist the student in the development of study skills and effective learning patterns and in integrating nursing concepts. The course should be developed in conjunction with the English and Reading Departments of the college.

5. Students identified as high risk as a direct result of this study (ie. repeaters of theory courses) should be

categorized according to their number of course repeats, cumulative GPA in theory and clinical and particular course failed. They should be required to register for the study laboratory as an adjunct to their current coursework. It is recommended that the high risk categories be established as follows:

Category	Description	Study Laboratory
1	Failure/WD one theory course	Recommended
2	Failure/WD two theory courses	Recommended
3	Failure/WD three theory courses	Required
4	Failure/WD N-3 MR theory	Required
5	GPA theory courses < 2.5	Required
6	GPA clinical courses < 3.0	Required

6. A follow-up study should be conducted on students in the study laboratory group in regards to the following criteria:

   a. The number of high risk students completing the generic nursing program in the currently prescribed five semesters.

   b. Increased retention of high risk students.

   c. Lower numbers of high risk students due to the early identification, advisement and follow up of these students.

   d. Increased percentage of high risk students passing the NCLEX on the first attempt.

7. Each high risk student should be assessed at the end of their freshman year for results of the treatment and guidance provided for them.

8. It is also recommended that close attention be given to those students who appear to possess the profile of the

non-successful students for the NCLEX such as males or students who have accumulated more than sixty MDCC credits since this may indicate potential difficulty in the program.

9. Further studies should be conducted on certain demographic and educational characteristics of students in the program and success or failure on the NCLEX.

10. Faculty, students and academic advisors should have access to the results of this project and prescribed treatments available to students identified as high risk to better inform them of program requirements and expectations.

11. A committee consisting of nursing faculty, Reading and English Department faculty and academic advisors should be established to review particular situations and areas of concern and to suggest methods for improving student retention and advisement. This committee should meet regularly and disseminate any appropriate findings.

12. Exit interviews which are curently conducted for all students who withdraw from the program should place additional emphasis on the reasons for withdrawal when a student must withdraw due to academic reasons such as having repeated nursing courses.

13. An ongoing evaluation of the nursing program should be conducted by examining the results of students' performance on the NCLEX and admitting or program criteria.

14. Further studies should investigate reasons why certain courses in the program such as Nursing 3 for

Multi-Resources theory and clinical had a high number of students repeating the course. Various factors such as course content and expectations should be considered.

15. More studies are needed regarding academic achievement in nursing school, especially in regards to repeated nursing courses for both the theory and clinical areas.

The results of this study will be made available to nursing chairpersons, the Dean of Nursing, the campus Vice-President and the nursing faculty, including the faculty responsible for the development and teaching of the study laboratory course. They will also be made available to the Nursing Curriculum Committee, the selections committee and advisors responsible for the counseling and guidance of nursing program pre-admission students.

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APPENDIX A

NCLEX-RN RESULTS (FALL 1983-FALL 1985)

APPENDIX A

NCLEX-RN Results (Fall 1983-Fall 1985)

Term Graduated	Date NCLEX Taken	Success No.	Success %	Failure No.	Failure %	Total No.	Total %
Fall 1983 (83-1)	Feb. 1984	42	93.3	3	6.7	45	100.0
Winter 1984 (83-2)	July 1984	34	91.9	3	8.1	37	100.0
Fall 1984 (84-1)	Feb. 1985	48	88.9	6	11.1	54	100.0
Winter 1985 (84-2)	July 1985	40	83.3	8	16.7	48	100.0
Spring 1985 (84-3)	July 1985	16	64.0	9	36.0	25	100.0
Fall 1985 (85-1)	Feb. 1986	39	86.7	6	13.3	45	100.0
Total	--	219	86.2	35	13.8	254	100.0

N=254

APPENDIX B

ADN GENERIC PROGRAM CURRICULUM

APPENDIX B

ADN GENERIC PROGRAM CURRICULUM

NURSING (A.D.N.- GENERIC, FULL TIME)

FRESHMAN YEAR
Semester 1

Course Number	Course Title	Semester Credits
NUR 1021	Nursing 1	4 cr
NUR 1021L	Nursing 1 Lab	7 cr
APB 2190	Anatomy and Physiology	2 cr
APB 2190L	Anatomy and Physiology Lab	1 cr
ENC 1101	English Composition	3 cr
NUR 1143	Pharmacology Math	3 cr
		20 cr

Semester 2

Course Number	Course Title	Semester Credits
NUR 1210	Nursing 2, Multi-Resources	2 cr
NUR 1210L	Nursing 2, Lab Multi-Resources	4 cr
NUR 1520	Nursing 2, Communications	2 cr
NUR 1520L	Nursing 2, Lab Communications	3 cr
APB 2191	Anatomy and Physiology	2 cr
APB 2191L	Anatomy and Physiology Lab	1 cr
CHM 1034	Basic Chemistry	3 cr
CHM 1034L	Basic Chemsitry Lab	1 cr
		18 cr

Semester 3

Course Number	Course Title	Semester Credits
NUR 1211	Nursing 3, Multi-Resources	2 cr
NUR 1211L	Nursing 3, Lab Multi-Resources	4 cr
NUR 1410	Nursing 3, Growth and Development: Childbearing Family	2 cr
NUR 1410L	Nursing 3, Lab Growth and Development: Childbearing Family	3 cr
DEP 2000	Human Growth and Development	3 cr
MCB 2013	Microbiology	3 cr
MCB 2013L	Microbiology Lab	2 cr
		19 cr

SOPHOMORE YEAR

Semester 4

Course Number	Course Title	Semester Credits
NUR 2730	Nursing 4, Multi-Resources	2 cr
NUR 2730L	Nursing 4, Lab Multi-Resources	4 cr
NUR 2310	Nursing 4, Growth and Development: Children and Adolescents	2 cr
NUR 2310L	Nursing 4, Lab Growth and Development: Children and Adolescents	3 cr
PSY 1000	The Individual in Transition	3 cr
		14 cr

Semester 5

Course Number	Course Title	Semester Credits
NUR 2810	Nursing 5, Transition from Student to Graduate Nurse	2 cr
NUR 2810L	Nursing 5, Lab and Seminar, Transition from Student to Graduate Nurse	8 cr
HUM 1020	Humanities	3 cr
SSI 1120	Social Environment	3 cr
		16 cr

GENERIC

APPENDIX C

STUDENT PROFILE BY GRADUATING CLASS

(Fall 1983-Fall 1985)

APPENDIX C

STUDENT PROFILE BY GRADUATING CLASS
(Fall 1983-Fall 1985)

Characteristic	Graduating Class											
	Fall 1983 N=45		Winter 1984 N=37		Fall 1984 N=54		Winter 1985 N=48		Spring 1985 N=25		Fall 1985 N=45	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sex												
Male	5	11.1	5	13.5	5	9.3	4	8.3	3	12.0	4	8.9
Female	40	88.9	32	86.5	49	90.7	44	91.7	22	88.0	41	91.1
Totals	45	100.0	37	100.0	54	100.0	48	100.0	25	100.0	45	100.0
Age												
18-20	9	20.0	2	5.4	3	5.6	11	22.9	5	20.0	4	8.9
21-30	21	46.7	27	73.0	25	46.3	23	47.9	9	36.0	25	55.6
31-40	11	24.4	8	21.6	21	38.9	8	16.7	9	36.0	14	31.1
41 Plus	4	8.9	--	--	5	9.2	6	12.5	2	8.0	2	4.4
Totals	45	100.0	37	100.0	54	100.0	48	100.0	25	100.0	45	100.0
Prior MDCC College Credits												
0-15	11	24.4	7	19.0	10	18.5	12	25.0	9	36.0	7	15.6
16-30	13	28.9	5	13.5	12	22.2	10	20.8	4	16.0	6	13.3
31-45	13	28.9	13	35.1	15	27.8	11	22.9	5	20.0	11	24.5
46-60	4	8.9	3	8.1	7	13.0	6	12.5	4	16.0	6	13.3
60 Plus	4	8.9	9	24.3	10	18.5	9	18.8	3	12.0	15	33.3
Totals	45	100.0	37	100.0	54	100.0	48	100.0	25	100.0	45	100.0

APPENDIX C (continued)

STUDENT PROFILE BY GRADUATING CLASS
(Fall 1983-Fall 1985)

Characteristic	Graduating Class											
	Fall 1983 N=45		Winter 1984 N=37		Fall 1984 N=54		Winter 1985 N=48		Spring 1985 N=25		Fall 1985 N=45	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Educational Level												
High School Equivalency	1	2.2	1	2.7	2	3.7	6	12.5	1	4.0	1	2.2
HS Diploma	22	48.9	15	40.6	32	59.3	22	45.9	13	52.0	24	53.4
College Level Certificate	--	--	--	--	1	1.9	1	2.0	1	4.0	2	4.4
Non-Degree College Transfer	15	33.3	8	21.6	10	18.5	13	27.1	8	32.0	6	13.3
Associate Degree	3	6.7	11	29.7	6	11.0	3	6.3	1	4.0	10	22.3
Bachelors Degree	4	8.9	--	--	3	5.6	2	4.2	1	4.0	2	4.4
Masters Degree	--	--	2	5.4	--	--	--	--	--	--	--	--
Doctorate	--	--	--	--	--	--	1	2.0	--	--	--	--
Totals	45	100.0	37	100.0	54	100.0	48	100.0	25	100.0	45	100.0

N=254

APPENDIX D

COEFFICIENT MATRIX FOR ALL VARIABLES UNDER STUDY

APPENDIX D

Coefficient Matrix for All Variables Under Study

	No Repeats Theory	No Repeats Clinical	Repeat 1 Theory	Repeat 1 Clinical	Repeat 2 Theory	Repeat 2 Clinical	Repeat 3 or More Theory	Repeat 3 or More Clinical	GPA Nursing Theory	GPA Nursing Clinical	NCLEX
No Repeats Theory		.3221	-.6251	-.2400	-.3870	-.1993	-.2955	-.0877*	.5690	.4160	.3021
No Repeats Clinical	.3221		-.1217*	-.8734	-.1119*	-.3219	-.2553	-.1416	.2687	.4524	.1287*
Repeat 1 Theory	-.6251	-.1217*		.1521	-.2197	-.0391*	-.1907	-.0566*	-.1775	-.1750	-.0490*
Repeat 1 Clinical	-.2400	-.8734	.1521		.0497*	-.1138*	.0989*	-.0501*	-.1850	-.3023	-.1228*
Repeat 2 Theory	-.3870	-.1119*	-.2497	.0497*		.1582	-.1180*	-.0350*	-.2833	-1850	-.1112*
Repeat 2 Clinical	-.1993	-.3219	-.0391*	-.1138*	.1582		.2333	-.0180*	-.1709	-.3097	-.0365*
Repeat 3 or More Theory	-.2955	-.2553	-.1907	.0989*	-.1180*	.2333		.2967	-.3977	-.2337	-.3362
Repeat 3 or More Clinical	-.0877*	-.1416	-.0566*	-.0501*	-.0350	-.0180*	.2967		-.0790*	-.1800	.0356*
GPA Nsg. Theory	.5690	.2687	-.1775	-.1850	-.2833	-.1709	-.3977	-.0790*		.5789	.3812*
GPA Nsg. Clinical	.4160	.4524	-.1750	-.3023	-.1850	-.3097	-.2337	-.1800	.5789		.2184
NCLEX	.3021	.1287*	-.0490*	-.1228*	-.1112*	-.0365*	-.3362	.0356*	.3812*	.2184	

*p<.05 (All other values <.01)

BIOGRAPHICAL SKETCH OF AUTHOR

Julie E. Millican was born on June 10, 1952 in Miami, Florida. She has lived primarily in the South Florida area since that time. She met and married her husband, Jerry Millican, in 1970 and worked in various jobs including a computer key punch operator and secretarial work.

She attended Miami-Dade Community College from 1972 to 1974 when she received an Associate of Science Degree in Nursing. While working full-time and then part-time as a Registered Nurse, she went on to attend Florida International University (FIU) and received a Bachelor of Science Degree in Nursing with a minor in education. She continued to attend that institution and went on to obtain a Master of Science Degree in Adult Education in 1980 from FIU.

The desire to teach nursing had been a career goal for several years. In 1979 a part-time position became available at Miami-Dade Community College (MDCC), the college she had attended five years earlier. She continued to work at MDCC as a full-time instructor in nursing. She is currently working as an Associate Professor in Nursing at MDCC and at the writing of this paper, is the Acting Chairperson of the Generic Associate Degree Nursing Program.